DEPARTMENT OF CALIFORNIA HIGHWAY PATROL

FINAL STATEMENT OF REASONS

TITLE 13, CALIFORNIA CODE OF REGULATIONS, DIVISION 2, CHAPTER 2
AMEND ARTICLE 22, SECTIONS 811-818

LIGHTING EQUIPMENT - WARNING LAMPS
(CHP-R-01-02)
(OAL FILE NO. Z-02-0306-03)

PURPOSE OF REGULATIONS AND PROPOSED AMENDMENTS

Section 26103 of the California Vehicle Code (VC) authorizes the California Highway Patrol (CHP) to adopt regulations establishing standards and specifications for, among other items, lighting equipment. Standards for warning lamps for emergency vehicles and special hazard vehicles are contained in Sections 810-818, Title 13, California Code of Regulations (13 CCR).

The current standards refer to specific technologies utilized in lighting devices. These specific technologies were intended to be descriptive of the type of lighting device to which the standards applied and were representative of the types of lighting devices available and in common usage at the time the standards were adopted.

Lighting technology has progressed in recent years, and a number of additional technologies have been successfully employed in lighting devices. Often the newer technologies offer increased performance, efficiency and reliability in comparison with older technologies.

It is not the CHP's intent to limit the technology utilized in lighting devices. The CHP's sole intention in classifying lighting devices by technology employed was to group lighting devices together for the purpose of promulgating reasonable and meaningful standards for the various types of lighting devices available at that time.

The CHP is now amending these standards to clarify that they apply to all warning lamps, regardless of technology employed, and that any suitable technology may be employed in such lamps provided the applicable standards are met. This amendment merely codifies existing CHP policy and does not make any changes to the standards themselves.

Additionally, the CHP is amending the standards for warning lamps for undercover cars. Currently, regulations specify requirements for the required steady red warning lamp. This amendment will add requirements for optional red, amber and blue warning lamps for such vehicles.

The CHP is also making other clarifying and non-substantive changes.

SECTION BY SECTION OVERVIEW

810. Scope
Adds the warning lamps governed by Sections 25279, 25280, 25281 and 25282 VC to those specifically included in the regulations.

811. Definitions.
Existing subsections are amended to clarify the intent of the standards and to eliminate references to specific lighting technologies. A new subsection is added to provide a definition of "light source."

813. General Requirements.
This section is amended to clarify the intent of the standards and to eliminate reference to specific lighting technologies.

815. Temperature and Durability Test Requirements.
This section is amended to clarify the intent of the standards and to eliminate reference to specific lighting technologies.

§817. Photometric Test Requirements.
Existing subsections are amended to clarify the intent of the standards and to eliminate references to specific lighting technologies. A subsection is added to specifically state that the standards shall not be construed to prohibit the use of alternative technologies provided the appropriate photometric requirements for the type of lamp are met.

§818. Type of Warning Lamps Used on Emergency Vehicles and Special Hazard Vehicles.
Existing subsection (g) is amended to specify photometric requirements for additional warning lamps on undercover cars.

Title for Table 1. The title for Table 1 is amended to eliminate references to specific lighting technologies.

RESPONSES TO FIRST PUBLIC COMMENT PERIOD

The CHP received two written responses to the March 22, 2002, Notice of Proposed Regulatory Action. Summaries of the written comments, discussions, and CHP responses follow.

Comments received from Mr. Robert A. Czajkowski, representing Federal Signal Corporation:

1. Mr. Czajkowski recommends that, "In Section 815, subsection (d), Required Performance, the proposed change:

> "The voltage at the terminals of ~~incandescent~~ individual light sources shall be not more than 0.50 ~~V~~ volt below the input terminal voltage of 12.8 ~~V~~ volts 12-~~V~~ volt units and not more than 1.0 ~~V~~ volt below the required input terminal voltage ~~of 25.6 V 24-V units~~ for lamps intended to operate at 24 volts or more with the device operating.

"As written, this change will not be able to be met by light emitting diodes currently in general use. Current light emitting diodes operate at voltages well below the input voltage of most current lighting devices. We propose the wording be changed as follows:

> "The voltage at the terminals of ~~incandescent light sources~~ warning lamp unit shall be not more than 0.50 ~~V~~ volt below the input terminal voltage of 12.8 ~~V~~ volts for 12-~~V~~ volt units and not more than 1.0 ~~V~~ volt below the required input terminal voltage ~~of 25.6 V~~ for ~~24-V units~~ for lamps intended to operate at 24 volts or more with the device operating."

The apparent intent of this recommended change is to reflect that the voltage applied to individual light sources may not be equal to the voltage applied to the lighting device input terminals. The purpose of the original language of this Section was to assure that the incandescent light sources then in common use were supplied with voltage as near as possible to the optimum design voltage, in order to assure proper lamp performance.

The Department is aware, however, that the voltage applied to any individual light source in a warning lamp assembly, particularly those utilizing technologies other than incandescent filament, might utilize voltages which differ necessarily and significantly from the voltage applied to the lighting device input terminals. Further, proper photometric performance necessitates that proper voltage be supplied to each individual light source. Therefore, the Department concurs that, for testing purposes, the voltage applied to the lighting device input terminals must be regulated properly, but that the voltage applied to any individual light source is a matter to be determined by the lighting device designer in a manner to satisfactorily comply with specified performance requirements, and is therefore not a matter for regulation.

However, the Department believes that the proper designation of a lighting device in this context is "warning lamp assembly" rather than "warning lamp unit," as suggested by Mr. Czajkowski. A warning lamp assembly, as defined in the proposed amendment to Section 811(b) of this regulation, refers essentially to any lighting device addressed by this regulation. A warning lamp unit, as defined in Section 811(d) of this regulation, refers specifically to a "sealed or semisealed optical unit designed to meet the dimensional specifications of SAE J571d, June 1976, SAE J572a, January 1972, or SAE J760a, December 1974." Thus the definition of a warning lamp unit is limited to only those devices which incorporate incandescent filament, sealed beam technology, and excludes other technologies, such as light emitting diodes. Consequently, the

Department has revised the proposed text to reflect the intent of the recommendation offered by Mr. Czajkowski, but has substituted the phrase "warning lamp assembly" for "warning lamp unit."

2. Mr. Czajkowski recommends that, "In Section 818, subsection (g) Warning Lamps for Undercover Cars, the requirement of 'a filament of at least 30 ~~W~~ watts' will effectively eliminate LED or other possible future light sources which do not employ a filament to produce visible light." Mr. Czajkowski recommends that this requirement be dropped.

During the preparation of this proposed regulatory action, the Department originally considered and then rejected this amendment. Current regulations permit the required steady-burning forward-facing red warning lamp on an undercover car to be either a class A, B, or C warning lamp, or a fixed or handheld red spotlamp with a filament rated at least 30 watts and producing at least 3,000 candela at the brightest point in the beam.

Incandescent lamp, reflector and lens technology available at the time this provision was originally adopted assured that at least some light energy was also projected off the main axis of the beam. However, the Department understands that current light emitting diode technology, for example, could result in a very narrow beam pattern, with very little light energy projected off the main axis. Because of this narrow beam pattern characteristic, the Department believes that this minimal light energy projected off axis might result in insufficient warning being given to drivers, particularly from a hand-held spot lamp that may not always have it's beam directed immediately to the front under the conditions for which it is likely to be utilized.

Further, the Department understands that warning lamps employing light emitting diode technology and meeting either Class A, B or C are currently available. Consequently, the Department sees no need to also permit devices which fail to meet the requirements of a Class A, B or C warning lamp. In fact, the Department would prefer to repeal the provision permitting such lamps because lamps meeting Class A, B or C are so readily available, due in great part to the emergence of alternative lighting technologies. However, the Department chose not to repeal those provisions because such lamps may be in current use and the Department has no compelling reason to require that such lamps be removed from service.

Comments received from Mr. Robert E. Kreutzer, representing Code 3, Inc.:

1. Mr. Kreutzer recommends, in Section 815(f), "replacing the word 'any' with the words 'a given.'" Mr. Kreutzer makes this recommendation because he feels that the requirements, as stated, are subject to misinterpretation, "e.g., public may assume 360 degree coverage is required."

The Department does not share Mr. Kreutzer's concern. The existing wording has been in place for a substantial period of time and was carried forward in this proposed amendment without change. While the wording proposed by Mr. Kreutzer might be slightly more clear than the existing wording, the Department is not aware of any widespread confusion or compelling need for change. Consequently, the Department respectfully declines to make the change suggested by Mr. Kreutzer.

2. Mr. Kreutzer recommends, in Section 817(e), "adding the words 'or Table IV' following the words 'requirements of Table II' in line seven." Mr. Kreutzer presumably makes this recommendation because revolving incandescent warning lamps are currently permitted to meet either Table II or Table IV photometric requirements and he feels that warning lamps approximating or simulating the appearance revolving warning lamps should be allowed to meet the same standard. Mr. Kreutzer states that this would make available to users lamps "that more closely meet their warning needs."

The Department originally considered the wording proposed by Mr. Kreutzer but rejected it because the Department believes that the requirements contained in Table II are more stringent than those in Table IV, that a more effective warning is provided, and further believes that the motoring public deserves the highest level of performance from warning lamps. The Department understands that there are lamps incorporating alternative technologies currently available which comply with the requirements contained in Table II and does not believe that there is a compelling traffic safety need to permit such lamps to meet the generally less stringent requirements of Table IV. While lamps meeting the requirements of Table IV may result in some relatively minor economic saving to purchasers, the Department does not believe that the possible reduction in traffic safety would justify any economic advantage. Consequently, the Department declines to adopt this recommendation.

3. Mr. Kreutzer recommends, in Section 815(e), "replacing the phrase 'revolving or gaseous discharge lamp' with the phrase 'revolving, gaseous discharge or other appropriate technology lamp.'" Mr. Kreutzer makes this recommendation because he feels that it would clarify the intent that any suitable technology be permitted.

The Department believes that Mr. Kreutzer may have misinterpreted the intent of this provision. The intent is not to specify that tow cars must be equipped with any specific technology, but to, in essence, accommodate the limits of existing, conventional technology. The pertinent provisions of Section 815(e) state:

> The flashing yellow warning lamp permitted to be displayed to the rear of a tow car while towing a vehicle and moving at a speed slower than the normal flow of traffic may be a 360-deg(ree) revolving or gaseous discharge lamp. In such case, the front and side areas of the lens or transparent cover that extends back to 45-deg(rees) to each side of the straight-to-the-rear axis of the lamp shall be covered with opaque material reaching to the top of the lighted area. A revolving lamp may instead be equipped with a device that turns each light source off during the forward three-fourths of its rotation.

The purpose of this provision is to permit the installation of warning lamps ordinarily having 360 degree coverage, for a purpose which specifically limits the projection of light only to the rear. The provision accomplishes this by specifically permitting the use of otherwise non-compliant lamps with 360 degree coverage if proper means is provided to prevent the projection of flashing light directly to the sides or front. This provision is intended only as a convenience of tow car

owners and operators, permitting the use of commonly available devices in an application where their use would otherwise be prohibited.

The Department understands that there is a vast array of lighting devices currently available using both conventional and alternative technologies which are capable of focusing and directing light in the required directions. Therefore, the Department declines to provide further accommodation for lighting devices which do not provide proper focus and direction for the lighting device as required by statute.

4. Mr. Kreutzer recommends, in Section 818(g), "adding the word 'license' after the word 'special' in line two."

While Mr. Kreutzer correctly notes that the reference is to "special *license* plates," the Department is not aware of any confusion regarding the existing wording, which has been in place for a substantial period of time and was carried forward in this proposed amendment without change, and therefore respectfully declines to adopt this recommended change.

5. Mr. Kreutzer, like Mr. Czajkowski, recommends, in Section 818(g), deleting the words, "with a filament of at least 30 watts" from line four.

For the reasons stated above in response to the second comment from Mr. Czajkowski, the Department respectfully declines to adopt this change.

6. Mr. Kreutzer notes that "a scissors symbol appears in text locations where the author likely intended a plus-or-minus symbol to be present."

The Department apologizes for this inadvertent error, which may have appeared on some copies of the proposed text. This error was the result of a conflict between earlier and later versions of a "driver" file used by the word processing software utilized in preparing the regulatory action documents. The correct plus-or-minus symbol appeared on computer screens but in some cases was printed as a scissors symbol. The correct version of all documents was posted on the Department's web site and the Department believes that correct documents were mailed to all recipients on the mailing list. Apparently some documents containing that error were also mailed. Because the only question on this matter was received from Mr. Kreutzer and he was able to accurately discern the intended symbol, the Department is relieved that this error apparently did not cause widespread misunderstanding of the proposed amendments. Again, the Department regrets this error.

7. Finally, Mr. Kreutzer, in a telephone call on May 28, 2002, brought to the Department's attention, that the scope in Section 810 13 CCR, makes the requirements contained in Sections 810-818 13 CCR, applicable only to warning lamps governed by Vehicle Code (VC) Sections 25252-25278, ignoring those similarly authorized by Sections 25279, 25280, 25281 and 25282 VC.

The Department originally adopted the requirements contained in Sections 810-818 13 CCR, to regulate all warning lamps then authorized by the VC. However, subsequent to the adoption of

Sections 810-818 13 CCR, Sections 25279, 25280, 25281 and 25282 VC have been added to the VC, but these Sections were not added to the scope in Section 810 13 CCR. The Department regrets this oversight and thanks Mr. Kreutzer for bringing it to the Department's attention.

To be effective, warning lamps must give a clear, unambiguous signal to other motorists. It is the intent of the Department to have uniform standards for all warning lamps, as far as is practicable. The Department is not aware of any reason that the vehicles described in Sections 25279, 25280, 25281 and 25282 VC should not or cannot be equipped with warning lamps meeting these standards. Therefore, it has been the policy of the Department to apply the standards contained in Sections 810-818 13 CCR, to all authorized emergency and special hazard vehicle warning lamps. In fact, the Department believes that the vast majority of such vehicles already comply with the standards. Consequently, the Department proposes to correct this oversight and to extend the scope defined in Section 810 13 CCR to additionally include the warning lamps permitted on the vehicles described in Sections 25279, 25280, 25281 and 25282 VC, as recommended by Mr. Kreutzer. Section 810 13 CCR, has therefore been amended to include the additional Sections.

RESPONSES TO SECOND PUBLIC COMMENT PERIOD

No comments were received in response to the September 30, 2002, Modified Notice of Proposed Regulatory Action.

PUBLIC HEARINGS

No public hearing was requested during the open comment period; therefore, no hearing was held.

STUDIES/RELATED FACTS

None.

ALTERNATIVES

The CHP has determined that no reasonable alternative considered by the CHP or that has otherwise been identified and brought to the attention of the CHP would be more effective in carrying out the purpose for which the action is proposed or would be as effective and less burdensome to affected private persons than the proposed action.

Alternatives Identified and Reviewed

1. Make no changes to the existing regulations. This alternative was rejected because it fails to specifically accommodate newer technologies, and fails to address the needs of undercover cars.

LOCAL MANDATE

These regulations do not impose any new mandate on local agencies or school districts.

ECONOMIC IMPACT ON BUSINESS

The CHP has not identified any significant adverse impact on businesses.

FISCAL IMPACT TO THE STATE

The Department has determined these regulation amendments will result in:

- No significant increased costs for owners or operators of emergency vehicles. This rulemaking action will simply codify existing policy and may result in lower costs;
- No significant compliance cost for persons or businesses directly affected;
- No discernible adverse impact on the quantity and distribution of goods and services to large and small businesses or the public;
- No impact on the level of employment in the state; and
- No impact on the competitiveness of this state to retain businesses, as state, provincial and national governments throughout North America have already adopted these requirements.